

JOURNAL
OF THE
WASHINGTON ACADEMY OF SCIENCES

VOL. 17

FEBRUARY 19, 1927

No. 4

BOTANY.—Alfaroa, a new genus of trees of the family Juglandaceae from Costa Rica. PAUL C. STANDLEY, U. S. National Museum.¹

In 1924 the writer found in flower in the mountains south of Cartago, Costa Rica, a tree which at the time of collection was supposed to be *Oreomunnea pterocarpa* Oerst., one of the least-known and most remarkable trees of Central America. That tree has had a curious history, and is of interest because of the fact that it has been referred by some botanists to the genus *Engelhardtia*, a group known otherwise from the East Indies.

Later Mr. C. H. Lankester forwarded specimens of the same tree collected at Juan Viñas, in the same general region. Comparison of them with authentic material of *Oreomunnea* proved that they represented a different species. These new specimens were just past the flowering state, and the bracts very small, but it was supposed that they might in age develop into the large hand-shaped bracts that distinguish *Oreomunnea*. The Juan Viñas specimens were given a provisional name as a new species of *Oreomunnea*, but fortunately it was decided to delay publication until more material had been collected. This I was able to do during the present year, when in early March a second visit was made, in company with Prof. Rubén Torres Rojas, to El Muñeco, perhaps the richest locality botanically that I have ever seen. We were fortunate in finding the trees in young fruit. The fruits proved to be a great surprise, for they were not at all like those of *Oreomunnea*, but rather miniature walnuts.

Aside from the superficial aspect of the fruit, the tree did not resemble very closely a walnut tree. Study of the ample series of material now at hand indicates that this Costa Rican tree is best treated as the type of a new genus, which is described here.

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Alfaroa Standl., gen. nov.

Tree; leaves mostly opposite, estipulate, pinnate, with no truly terminal leaflet, the leaflets numerous, mostly alternate but sometimes opposite, membranaceous, serrate or entire, glandular-punctate beneath; flowers monoecious, spicate, the spikes terminal, the pistillate flowers numerous, inserted singly, sessile, the staminate flowers few, solitary and sessile at the base of the spike or few and arranged upon two short basal branches; bracts of the staminate flowers linear-subulate, shorter than the calyx and free from it; calyx irregularly 4-5-lobed, the lobes oblong, obtuse; stamens about 9, inserted in a single series about the ovoid rudiment of the ovary, the filaments nearly obsolete, the anthers 2-celled, dehiscent by longitudinal slits; pistillate flowers subtended by a minute 3-lobed free bract shorter than the ovary; perianth deeply 4-lobed, the lobes oblong-linear, unequal, obtuse, erect, persistent upon the apex of the fruit; style shorter than the perianth lobes, bifurcate, the stigmas subglobose, verrucose; fruit oval or obovoid, small, the pericarp nearly dry, thin, indehiscent, adhering closely to the endocarp; nut thin-walled, smooth, falsely 4-celled, the partitions nearly complete; seeds 4-lobed to the base.

The genus is named in honor of Anastasio Alfaro, Director of the National Museum of Costa Rica, who is remembered with affectionate regard by all scientists who have visited Costa Rica for many years past. His enthusiasm, with regard to all matters relating to natural history has done much to stimulate in others an interest in these subjects. In botany his chief interests have been the ferns and orchids, and in the latter, especially, he has made notable discoveries. To the National Herbarium he has contributed an extensive series of beautifully prepared specimens of orchids, representing many species of this family of plants, in which Costa Rica is supreme among American countries. To Don Anastasio the writer is indebted personally for many courtesies extended during two visits to Costa Rica.

Alfaroa costaricensis Standl., sp. nov.

Tree 5-12 m. high or larger, the small crown composed of few spreading branches; bark nearly smooth, pale brownish; branchlets and leaf rachis usually densely hirsute with long stiff divaricate hairs, sometimes merely velutinous-pubescent or in juvenile plants glabrate; leaves almost all opposite, those of a pair often very unequal, or one of the leaves sometimes suppressed; leaflets usually 10-20, very variable, often almost all opposite, oblong to narrowly lance-oblong, usually 10-18 cm. long and 1.5-4 cm. wide but often larger, the lowest leaflets of each leaf usually much reduced, acute to long-acuminate at apex, sessile, obtuse to truncate at base and oblique, rarely auriculate on the lower side, densely serrate with apiculate teeth or often entire, membranaceous, above glabrous or nearly so except on the costa, beneath glaucous or glaucescent, usually hirtellous along the nerves and sometimes puberulent between the nerves, but often glabrous or nearly so; flower spikes stout, erect, 3-5 cm. long, short-pedunculate, the rachis densely hirtellous and glandular, the pistillate portion many-flowered (flowers 30-50), dense or interrupted; staminate flowers few, solitary near the base of the spike or 2 to 4 on lateral basal branches less than 1 cm. long; staminate flowers 4 mm.

broad, the perianth glandular; pistillate flowers green, 5–6 mm. long, the ovary sparsely hirtellous and densely covered with golden glands, the lobes 1 mm. wide, glabrate, the outer surface with a few golden glands; stigmas red; fruiting spikes 12–18 cm. long or longer, many-fruited; fruits oval or obovoid, about 2.5 cm. long and 2 cm. thick, densely velutinous-hirsute and covered with sessile glands; nut smooth, broadly rounded at base and apex, the endocarp less than 1 mm. thick.

Type in the U. S. National Herbarium no. 1,226,388, collected in moist forest at El Muñeco, south of Navarro, Province of Cartago, Costa Rica, altitude about 1,400 meters, February 8, 1924, by Paul C. Standley (no. 33620.)

The following additional collections represent the same species:

COSTA RICA: Juan Viñas, alt. 1,260 m., in open pasture, June, 1922, C. H. Lankester. La Estrella, Province of Cartago, *Standley* 39217, 39446. Alto de la Estrella, *Standley* 39122. El Muñeco, *Standley* 33501, 33504; *Standley & Torres* 50870, 50874, 50969, 50986, 51078, 51204.

The genus *Alfaroa* is related to *Juglans*, but differs in several important characters. It is unique in the Juglandaceae in having opposite leaves. It is difficult to make a definite decision regarding the arrangement of the leaves, but it is certain that most of them are opposite, and always those on young sterile branches. Occasionally on the older, larger branches there is a single leaf at a node.

In *Juglans* the leaves have a terminal leaflet. In that genus, of course, the nut is rugose, and usually much roughened. I did not notice that the foliage of *Alfaroa* had any odor suggestive of that of walnut leaves, but the glands upon the leaves would suggest the possibility of an aromatic odor.

It is in the inflorescence that the two genera exhibit the greatest divergence. The staminate flowers of *Juglans* are borne in slender drooping catkins; in *Alfaroa* they are borne singly at the base of the erect pistillate spike, or upon two short special lateral branches.

Trees of *Alfaroa* are abundant in the wet mountains south of Cartago, especially at El Muñeco, where they are plentiful among other trees on the tops of the hills. The plants sometimes flower when they are mere shrubs, and the aspect of the mature tree does not suggest a walnut tree. The pale under surface of the leaves is striking, and the young leaves are usually handsomely colored with red and pink. The long spikes of small fruits, recurved by their weight, are borne in great profusion.

For this tree I was given by a guide the name *gaulín*, but this name was disputed by other persons. No use is made of the nuts, apparently. I have not seen the nuts when mature and fresh, and do not know whether they are edible.